What is claimed is:

1. An apparatus for measuring power consumption comprising:

a rectifying unit which rectifies and smoothes an AC voltage input to output a DC voltage;

a transforming unit having a primary coil and a secondary coil, the first coil receiving the DC voltage from the rectifying unit and the secondary coil producing a voltage in accordance with current fluctuations in the primary coil;

a switching unit which switches on or off the DC voltage at the primary coil with pulse-width modulation (PWM);

a voltage regulating unit which regulates a voltage derived from the voltage at the primary coil of the transforming unit; and

a control unit which:

calculates a turn-on time of the switching unit based on the regulated voltage, and

calculates power consumption based on the calculated turn-on time, a switching frequency of the switching unit and an inductance of the transforming unit.

2. The apparatus for measuring power consumption according to claim 1, further comprising:

a display unit which indicates the power consumption calculated by the control unit.

3. The apparatus for measuring power consumption according to claim 1, wherein the voltage regulating unit comprises:

a voltage decreasing section which decreases the voltage derived from the primary coil of the transforming unit below a certain level,

a first clamp which clamps the decreased voltage at a first constant voltage level,

a transformer which transforms the first clamped voltage, and

a second clamp which clamps the transformed voltages at a second constant voltage level to output the regulated voltage.

4. An apparatus for measuring power consumption comprising:

a rectifying unit which rectifies and smoothes AC voltages input to output a DC voltage;

a transforming unit having a primary coil and a secondary coil, the primary coil receiving the DC voltage and the secondary coil producing a voltage in accordance with current fluctuations in the primary coil;

a switching unit which switches on or off the output voltages at the primary coil with pulse-width modulation (PWM);

a voltage regulating unit which regulates a voltage derived from the voltage at the secondary coil of the transforming unit; and

a control unit which:

calculates a turn-on time of the switching unit based on the regulated voltage, and

calculates power consumption based on the calculated turn-on time, a switching frequency of the switching unit and an inductance of the transforming unit.

5. The apparatus for measuring power consumption according to claim 4, further comprising:

a display unit which indicates the power consumption calculated by the control unit.

6. The apparatus for measuring power consumption according to claim 4, wherein the voltage regulating unit comprises:

a voltage decreasing section which decreases the voltage derived from the voltage of the secondary coil of the transforming unit below a certain level, and

a clamp which clamps the decreased voltage at a constant voltage level.

7. An apparatus for measuring power consumption comprising:

a rectifying unit which rectifies and smoothes AC voltages input to the rectifying unit to output a DC voltage;

a transforming unit having a primary coil and a secondary coil, to produce a voltage at the secondary coil in accordance with current fluctuations in the primary coil;

a switching unit which switches on or off the DC voltage at the primary coil with pulse-width modulation (PWM);

a voltage regulating unit which regulates at least one of a first voltage derived from the voltage at the primary coil and a voltage derived from the secondary coil; and

a control unit which:

calculates a turn-on time of the switching unit based on the at least one derived voltage, and

calculates power consumption based on the calculated turn-on time, a switching frequency of the switching unit and an inductance of the transforming unit.

8. The apparatus for measuring power consumption according to claim 7, further comprising a display unit which indicates the power consumption calculated by the control unit.

9. The apparatus for measuring power consumption according to claim 7, wherein:

where the voltage regulating unit regulates the first voltage derived from the voltage at the primary coil, the voltage regulating unit comprises:

a voltage decreasing section which decreases the voltage derived from the primary coil of the transforming unit below a certain level,

a first clamp which clamps the decreased voltage at a first constant voltage level,

a transformer which transforms the first clamped voltage, and

a second clamp which clamps the transformed voltage at a second constant voltage level.

10. The apparatus for measuring power consumption according to claim 7, wherein:

where the voltage regulating unit regulates the second voltage at the secondary coil of the transforming unit, the voltage regulating unit comprises:

a voltage decreasing section which decreases the voltage derived from the secondary coil of the transforming unit below a certain level, and

a clampwhich clamps the decreased voltage at a constant voltage level.

11. A method of calculating power consumption of an electronic device which is powered through a transformer having a predetermined primary coil inductance, wherein a current of a primary coil of the transformer is turned ON and OFF by pulse-width modulation to supply the power to the electronic device, the method comprising:

determining a drive voltage across the primary coil;

generating a pulse waveform having a first level corresponding to an ON time of the current in the primary coil and a second level;

determining the input current based on the drive voltage across the primary coil, the ON time of the current in the primary coil, and the predetermined inductance of the primary coil; and

calculating the power consumption based on an equation:

$$P = \frac{1}{2}\frac{V_i^2 \times t_{on}^2}{L_p} \times f(W),$$

where: P is the calculated power consumption,

V_i is the drive voltage,

L_p is the predetermined inductance of the primary coil,

t is the ON time of the current in the primary coil, and

$f(W)$ is a switching frequency of the pulse width modulation.

12. The method according to claim 11, further comprising:

sampling the drive voltage;

clamping the sampled drive voltage at predetermined maximum and minimum values; and

determining the ON time from the clamped voltage.

13. The method according to claim 11, wherein the sampling of the drive voltage comprises:

transforming the drive voltage using a second transformer having a predetermined turns ratio to output the sampled drive voltage.

14. The method according to claim 11, wherein the sampling of the drive voltage comprises:

attenuating the drive voltage according to a predetermined ratio to output the sampled drive voltage.

15. An apparatus for calculating power consumption of an electronic device which is powered through a transformer having a predetermined primary coil inductance, wherein a current of a primary coil of the transformer is turned ON and OFF by pulse-width modulation to supply power from an input voltage to the electronic device through a secondary coil of the transformer, the apparatus comprising:

a sampling circuit which outputs a sampled pulse waveform having a first level corresponding to an ON time of the current in the primary coil and a second level;

a controller which:

determines the ON time of the current and a switching frequency of the pulse width modulation based on the sampled pulse waveform, and

calculates the power consumption based on the ON time of the current, the switching frequency of the pulse width modulation, a value of the input voltage and the predetermined primary coil inductance.

16. The apparatus of claim 15, wherein the controller calculates the power consumption according to an equation:

$$P = \frac{1}{2}\frac{V_i^2 \times t_{on}^2}{L_p} \times f(W),$$

where: P is the calculated power consumption,

V_i is the value of the input voltage,

L_p is the predetermined primary coil inductance,

t_{on} is the ON time of the current in the primary coil, and

$f(W)$ is a switching frequency of the pulse width modulation.

17. The apparatus of claim 15, wherein:

a first end of the primary coil is connected to the input voltage;

another voltage is generated at a second end of the primary coil due to the switching of the current; and

the sampling circuit comprises:

an attenuator which attenuates the generated voltage at the second end of the primary coil,

a voltage clamp which limits the attenuated voltage to a first peak to peak value,

a second transformer which transforms the limited peak to peak voltage to a voltage having a second peak to peak value, and

a second voltage clamp which limits the transformed voltage to a third peak to peak value, to output the sampled pulse waveform.

18. The apparatus of claim 15, wherein the sampling circuit comprises:

an attenuator which attenuates a voltage generated at the secondary coil by the switching of the current; and

a clamp circuit which clamps the attenuated voltage at a predetermined peak to peak value, to output the sampled pulse waveform.

19. The apparatus of claim 16, wherein:

a first end of the primary coil is connected to the input voltage;

another voltage is generated at a second end of the primary coil due to the switching of the current; and

the sampling circuit comprises:

an attenuator which attenuates the generated voltage at the second end of the primary coil,

a voltage clamp which limits the attenuated voltage to a first peak to peak value,

a second transformer which transforms the limited peak to peak voltage to a voltage having a second peak to peak value, and

a second voltage clamp which limits the transformed voltage to a third peak to peak value, to output the sampled pulse waveform.

20. The apparatus of claim 16, wherein the sampling circuit comprises:

an attenuator which attenuates a voltage generated at the secondary coil by the switching of the current; and

a clamp circuit which limits the attenuated voltage to a predetermined peak to peak value, to output the sampled pulse waveform.

21. A switching mode power supply for powering an electronic device from a DC voltage and having a power consumption measuring function, the switching mode power supply comprising:

a transformer comprising a primary coil and a secondary coil, the primary coil having a first end, a second end and a predetermined inductance, one end of the primary coil being connected to the DC voltage;

a drive circuit connected to the second end of the primary coil and which switches a current in the primary coil ON and OFF according to pulse width modulation;

a pulse width modulator which provides the pulse width modulation according to a control signal;

a second rectifier circuit which rectifies a voltage at the secondary coil of the transformer; and

a sampling circuit which outputs a sampled pulse waveform having a first level corresponding to an ON time of the current in the primary coil and a second level; and

a controller which:

determines the ON time of the current and a switching frequency of the pulse width modulation based on the sampled pulse waveform, and

calculates the power consumption based on the ON time of the current, the switching frequency of the pulse width modulation, a value of the DC voltage and the predetermined primary coil inductance.

22. The apparatus of claim 21, wherein the controller calculates the power consumption according to an equation:

$$P = \frac{1}{2}\frac{V_i^2 \times t_{on}^2}{L_p} \times f(W),$$

where: P is the calculated power consumption,

V_i is the value of the DC voltage,

L_p is the predetermined primary coil inductance,

t_{on} is the ON time of the current in the primary coil, and

$f(W)$ is a switching frequency of the pulse width modulation.

23. The apparatus of claim 21, wherein:

another voltage is generated at a second end of the primary coil due to the switching of the current in the primary coil; and

the sampling circuit comprises:

an attenuator which attenuates the generated voltage,

a voltage clamp which limits the attenuated voltage to a voltage having a voltage having a first peak to peak value,

a second transformer which transforms the limited peak to peak voltage to a voltage having a second peak to peak value, and

a second voltage clamp which limits the transformed voltage to a third peak to peak value, to output the sampled pulse waveform.

24. The apparatus of claim 21, wherein the sampling circuit comprises:

an attenuator which attenuates a voltage generated at the secondary coil by the switching of the current; and

a clamp circuit which limits the attenuated voltage to a predetermined peak to peak value, to output the sampled pulse waveform.

25. The apparatus of claim 21, wherein:

a first end of the primary coil is connected to the DC voltage and a voltage is generated at a second end of the primary coil due to the switching of the current in the primary coil; and

the sampling circuit comprises:

an attenuator which attenuates the generated voltage at the second end of the primary coil,

a voltage clamp which limits the attenuated voltage to a voltage having a first peak to peak value,

a second transformer which transforms the limited peak to peak voltage to a voltage having a second peak to peak value, and

a second voltage clamp which limits the transformed voltage to a third peak to peak value, to output the sampled pulse waveform.

26. The apparatus of claim 22, wherein the sampling circuit comprises:

an attenuator which attenuates a voltage generated at the secondary coil by the switching of the current; and

a clamp circuit which limits the attenuated voltage to a predetermined peak to peak value, to output the sampled pulse waveform.